AMENDMENT UNDER 37 CFR § 1.111
Serial No. 09/975,895

## REMARKS

A total of 36 claims remain in the present application. The foregoing amendments are presented in response to the Office Action mailed December 20, 2004, wherefore reconsideration of this application is requested.

By way of the above-noted amendments, claims 1, 11, 16, 18, 19, 24 and 38 have been amended to clarify that the present invention is primarily focused on methods an apparatus for measuring Polarization Dependent Loss or Gain (PDL), as described in the title and specification of the originally filed application. Claims 2 and 25 have been cancelled in view of the amendments effected in claims 1 and 24.

In preparing the above-noted amendments, careful attention was paid to ensure that no new subject matter has been introduced.

Referring now to the text of the Office Action:

• claims 1-9, 12-22, 24-30 and 32-38 stand rejected under 35 U.S.C. § 102(e), as being unpatentable over the teaching of United States Patent Application No. 2004/0016874 (Rao et al.); and

• claims 10, 11, 23 and 31 stand rejected under 35 U.S.C. § 103(a), as being unpatentable over the teaching of United States Patent Application No. 2004/0016874 (Rao et al.) in view of Applicant's Admitted Prior Art..

The Examiner's claim rejections under 35 U.S.C. §102(e) and §103(a) are believed to be traversed by the above-noted claim amendments, and further in view of the following discussion.

Claim rejections under 35 U.S.C. §102(e)

In support of his rejection of claim 1, the Examiner states that United States Patent Application No. 2004/0016874 (Rao et al.) teaches a step of "evaluating the PDE using the predetermined initial polarization state (paragraph 0049, where every other bit having the same

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polarization state is a predetermined initial polarization state) and the detected polarization state (FIG. 4 and paragraphs 0071 and 0073)". Applicant respectfully disagrees.

In particular, while the optical signal of Rao et al arguably has an initial polarization state, Rao et al do not teach or suggest that the initial polarization state (or information describing it) is used in any manner whatsoever. In fact, Rao et al explicitly states that "the absolute polarization of the two orthogonally polarized bit interleaved pulse trains may be known or unknown at the output of the polarization beam combiner 74" (paragraph 0049), thereby clearly indicating that knowledge of the initial polarization state is optional. Furthermore, Rao et al clearly teach that the degree of polarization (DOP) is evaluated from the detected amplitudes of the modulation frequencies 106 and 106' in each of the first and second paths 120 and 122 of the modulation controller 100 (see FIG. 4 and paragraph 0073). No reference is made to the initial polarization state, and Rao et al do not teach or suggest any use for such information. More particularly, Rao et al does not teach or suggest that the initial polarization state (or information about it) is used to evaluate polarization dependent effects. In fact, Rao et al does not teach or suggest that such a calculation is desirable or even possible. Thus Rao et al fail to provide valid motivation for making such a modification.

In support of his rejection of claim 2 (which may be applied to amended independent claims 1, 19 and 24) the Examiner asserts that "the signal fade [due to PMD] is polarization dependent loss." Applicant respectfully disagrees.

As is well known in the art, Polarization Mode Dispersion (PMD) relates to pulse broadening due to excitation of orthogonal polarization modes as an optical signal propagates through a birefringent medium (See, for example, Agrawal, "Fiber-Optic Communications Systems" 3rd ed. , 2002, ISBN 0-471-21571-6, pages 36, 43, 197, 449 and 455). On the other hand, polarization dependent loss/gain (PDL) is a measure of the peak-to-peak difference in transmission of an optical system with respect to all possible states of polarization (See, for example, "Polarization Dependent Loss Measurement Of Passive Optical Components, Application Note", Agilent Technologies, March 2002). In other words, PMD is a function of the differential propagation speed of orthogonal polarization modes, whereas PDL is a function

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of differential signal attenuation/gain of the orthogonal polarization modes. Accordingly, while PMD and PDL are related (insofar as they are both functions of polarization), they are otherwise entirely different phenomena.

As such, the person of ordinary skill in the art will recognise that signal fade due to PMD is not polarization dependent loss/gain, as suggested by the Examiner, and that data indicative of "the onset of signal fade due to PMD" (as per Rao et al) is not in any way equivalent to measuring polarization dependent loss/gain (PDL), as in the present invention.

In light of the foregoing, it is submitted that United States Patent Application No. 2004/0016874 (Rao et al.) fails to teach all of the elements of the invention defined in independent claims 1, 19 and 24, and thus cannot support a rejection of these claims, and their dependencies, under 35 U.S.C. §102(e).

Claim rejections under 35 U.S.C. §103(a)

As noted above, United States Patent Application No. 2004/0016874 (Rao et al.) fails to teach all of the features of at least amended independent claims 1, 19 and 24, and their dependencies. None of the other cited references, including applicant's admitted prior art, provide the missing teaching. In particular, none of the other cited references teach or suggest using a predetermined initial polarization state in combination with a detected polarization state to evaluate polarization dependent effects.

In light of the foregoing, it is respectfully submitted that the presently claimed invention is clearly distinguishable over the teaching of the cited references, taken alone or in any combination. Thus it is believed that the present application is in condition for allowance, and early action in that respect is courteously solicited.

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If any extension of time under 37 C.F.R. § 1.136 is required to obtain entry of this response, such extension is hereby respectfully requested. If there are any fees due under 37 C.F.R. §§ 1.16 or 1.17 which are not enclosed herewith, including any fees required for an extension of time under 37 C.F.R. § 1.136, please charge such fees to our Deposit Account No. 19-5113.

Respectfully submitted,

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